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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/787,301	03/16/2001	Ola Olsvik	2001-0263A	8103

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EXAMINER
STRICKLAND, JONAS N

ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 07/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	09/787,301	OLSVIK, OLA	
	Examiner	Art Unit	
	Jonas N. Strickland	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed on 5/12/03 as Paper No. 7. Claims 1-20 have been cancelled without prejudice and replaced with new claims 21-40 respectively. No new matter has been added to the claims. The previous rejections of claims 1-20 have been withdrawn in view of Applicant's amendment.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 21-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pagani (CA 868821).

Applicant claims a method for preparing a carbon dioxide rich gas stream and a hydrogen rich gas stream, which comprises feeding natural gas and water into a reforming reactor to form a gas mixture, subjecting the gas mixture to a one-step reforming reaction under supercritical heat and pressure conditions for water to form a reformed gas mixture; and separating the reformed gas mixture into a hydrogen rich gas and a carbon dioxide rich gas stream.

Pagani discloses a steam reforming of methane, which reacts with steam on a special catalyst (p. 1, lines 1-3). Pagani continues to disclose wherein the reforming process occurs in a range from 50 to 250 bar (p. 3, lines 9-14). Pagani continues to disclose wherein the temperature in the reforming reactor is at 550°C (p. 3, lines 28-31). Therefore, it would have been obvious to one of ordinary skill in the art, to expect the methane and water from the reforming reactor to subject the gas mixture to a reforming reaction under supercritical conditions, since Pagani discloses wherein the reforming process occurs in a range from 50 to 250 bar and wherein the temperature in the reforming reactor is at 550°C, which are supercritical heat and pressure conditions for water. Furthermore, it would have been obvious to separate a carbon dioxide rich gas stream and a hydrogen rich gas stream, since Pagani discloses wherein a hydrogen and carbon dioxide stream are produced.

5. Claims 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pagani (CA 868821) as applied to claims 21-31 above, and further in view of Kapoor et al. (US Patent 5,714,132).

Applicant claims with respect to claims 32-36, wherein the reforming reaction is carried without a catalyst. Pagani teach using a catalyst in the reformer for producing a carbon dioxide and hydrogen gas mixture, but do not teach using a reformer without a catalyst.

However, Kapoor et al. teaches a process wherein a hydrocarbon is contacted with water vapor to produce a gaseous effluent comprised of hydrogen and carbon dioxide. Kapoor et al. continues to disclose wherein the reforming reaction is carried

out with a catalyst, but may be carried out thermally (col. 2, lines 15-28 and col. 2, lines 40-45).

Therefore, it would have been obvious to one of ordinary skill in the art, to modify the teachings of Pagani based on the teachings of Kapoor et al., by carrying out the reforming reaction without a catalyst in a process for producing hydrogen and carbon dioxide, because Kapoor et al. discloses a process for producing hydrogen and carbon dioxide, wherein the reforming reaction is not driven with a catalyst, but through thermal treatment. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill, would expect a process for producing hydrogen and carbon dioxide with a reformer reactor as taught by Kapoor et al., to be similarly useful and applicable to a process for producing hydrogen and carbon dioxide with a reforming reactor as taught by Pagani.

6. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pagani (CA 868821) as applied to claims 21-31 above, and further in view of Ronning et al. (US Patent 5,832,712).

Applicant claims with respect to claim 37, injecting the separated carbon dioxide rich gas stream into marine formations. While Pagani teaches producing carbon dioxide, Pagani does not teach injecting the separated carbon dioxide rich gas stream into marine formations.

However, Ronning et al. teaches a method for removing carbon dioxide from exhaust gases and wherein carbon dioxide can be compressed and injected either into deep sea water (col. 1, lines 20-25).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Pagani, based on the teachings of Ronning et al., by injecting carbon dioxide into marine formations, since Ronning et al. teaches wherein carbon dioxide can be compressed and injected either into deep sea water. Such modification would have been obvious to one of ordinary skill in the art, since Ronning et al. teaches a method for removing carbon dioxide and injecting carbon dioxide into deep sea water, and Pagani teaches a process for producing carbon dioxide. Therefore, the carbon dioxide produced by Pagani may be injected into the marine formation as taught by Ronning.

7. Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pagani (CA 868821) as applied to claims 21-31 above, and further in view of Beshty (US Patent 4,946,667).

Applicant claims with respect to claims 38-40, wherein the produced hydrogen may be used for hydrogenation, for fuel cells, and the production of electricity. While Pagani teaches a method for producing hydrogen, Pagani does not wherein the produced hydrogen may be used for hydrogenation, for fuel cells, and the production of electricity.

Beshty teaches a process for producing hydrogen by steam reforming. Beshty teaches wherein hydrogen may be used for hydrogenation, and in fuel cells for the generation of energy (col. 1, lines 15-24).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Pagani, based on the teachings of Beshty, by using hydrogen for hydrogenation, for fuel cells, and the production of electricity, since Beshty teaches

wherein hydrogen may be used for hydrogenation, and in fuel cells for the generation of energy. Such modification would have been obvious to one of ordinary skill in the art, since Beshty teaches a method for producing hydrogen by a steam reforming method, and wherein the hydrogen may be used for hydrogenation, for fuel cells, and the production of electricity and Pagani teaches process for producing hydrogen by a steam reforming method. Therefore, the hydrogen produced by Pagani may also be used for hydrogenation, fuel cells, and the production of electricity.

Response to Arguments

8. Applicant's arguments with respect to claims 21-40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N. Strickland whose telephone number is 703-306-5692. The examiner can normally be reached on M-TH, 7:30-5:00, off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0661.

Jonas N. Strickland
July 22, 2003

STANLEY S. SILVERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700